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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,316	06/21/2006	Futoshi Nakamura	Q76597	7489
23373 7590 01/26/2009 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER RICKMAN, HOLLY C	
			ART UNIT 1794	PAPER NUMBER
			MAIL DATE 01/26/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/564,316

**Applicant(s)**

NAKAMURA ET AL.

**Examiner**

Holly Rickman

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 1/12/06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 3, 13 and 14 (and all claims depending therefrom) are rendered indefinite by the phrase "grain isolation type structure." The use of the term "type" renders an otherwise definite expression indefinite. It is not clear to the examiner how a grain isolation "type" structure differs from a grain isolation structure. Deletion of the term is suggested.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being obvious over Shimizu et al. (US 6682826) in view of Ohmori (US 2001/0036564).

With regard to independent claims 1, 13, and 15, Shimizu et al. teaches a perpendicular magnetic recording medium having a substrate, a soft magnetic layer (2), an orientation control undercoat (7), an orientation control film (3), and a perpendicular recording layer (4) – see Fig 7. The orientation control film is formed of a metal combined with an oxide such as Ru-SiO<sub>2</sub> (See col. 5, lines 61-67). The reference teaches a number of oxide materials but fails to disclose the use of Y<sub>2</sub>O<sub>3</sub>.

Ohmori discloses a perpendicular magnetic recording medium having a Ru-metal oxide containing underlayer. The reference teaches a group of suitable oxide grain boundary materials for the underlayer including silica, alumina and Y<sub>2</sub>O<sub>3</sub> (see paragraph [0053]).

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute Y<sub>2</sub>O<sub>3</sub> for one of the oxide materials such as silica and alumina disclosed for use in the orientation control layer (i.e. underlayer) taught by Shimizu et al. in view of the functional equivalence of these oxides. Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Grover Tank & Mfg. Co. Inc V. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

With regard to independent claims 3, 14, and 16, Shimizu et al. teaches a perpendicular magnetic recording medium having a substrate, a soft magnetic layer (2), an orientation control undercoat (7), an orientation control film (3), and a perpendicular recording layer (4) – see Fig 7. The orientation control film may be formed from a variety of materials including Au-SiO<sub>2</sub> (see col. 11, lines 38-42). It would have been obvious to one of ordinary skill in the art at the time of invention to choose an Au-SiO<sub>2</sub>

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from the disclosed group of orientation control materials. Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Grover Tank & Mfg. Co. Inc V. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

With regard to the claimed Ni containing seed layer, Shimizu teaches that the layer (7) as shown in Fig 7 can be formed from NiAl or NiTi (see col. 12, lines 16-19). It would have been obvious to one of ordinary skill in the art to choose either of these materials for use in layer (7) in view of the functional equivalence of all of the disclosed materials for this layer.

With regard to claim 2, Shimizu et al. discloses the use of a Ru containing underlayer as noted above.

With regard to claim 4, Shimizu et al. teaches the use of SiO<sub>2</sub> with Au.

With regard to claims 5-6, it is the examiner's contention that the Ru layer described above meets the claim limitations directed to an underlayer as well as a second underlayer containing a Ru material disposed between the underlayer and the magnetic layer. The compositions of the underlayer and second underlayer as claimed can be the same. Thus, a lower portion of the Ru-oxide containing layer taught by Shimizu corresponds to the claimed underlayer. An upper portion of this layer corresponds to the claimed second underlayer.

With regard to claims 7-8, Shimizu et al. teaches a variety of materials for use as layer (7)- which corresponds to the claimed seed layer - including NiTi and NiAl. The reference also teaches that it is obvious to add alloying elements to these compositions. The alloying elements include Mo, Cr, W, Nb, Zr, and B.

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With regard to claims 9-10, see col. 4, line 62 to col. 5, line 4.

With regard to claims 11-12, see col. 13, lines 5-12.

With regard to claims 13-14, see examples and claims 11,13.

With regard to claims 15-16, see claims 12 and 14.

The applied reference (US 6682826) has a common assignee and inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6696172 and US 6468670 are cited as art of interest.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Holly Rickman/  
Primary Examiner  
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